FIG. 1

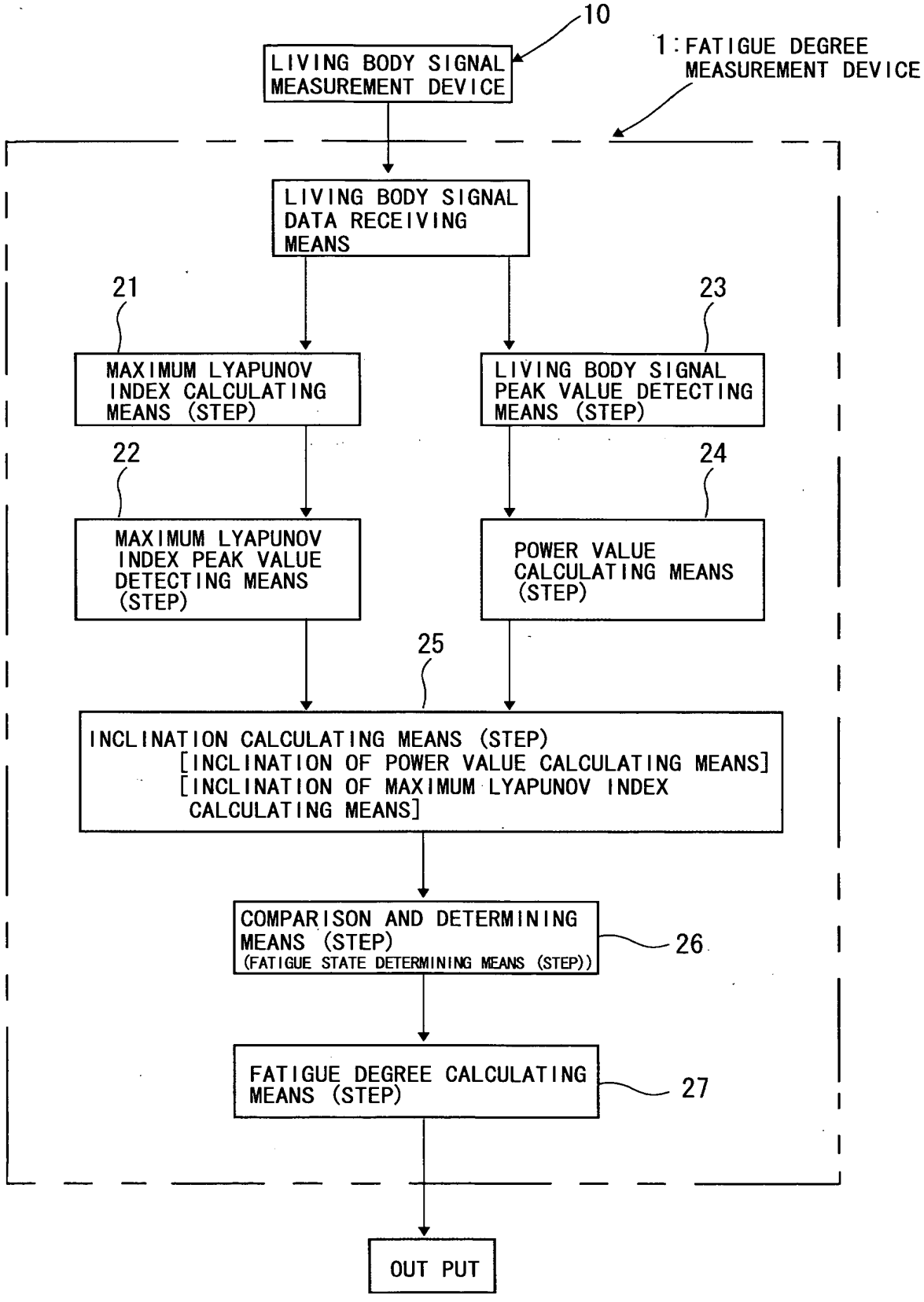
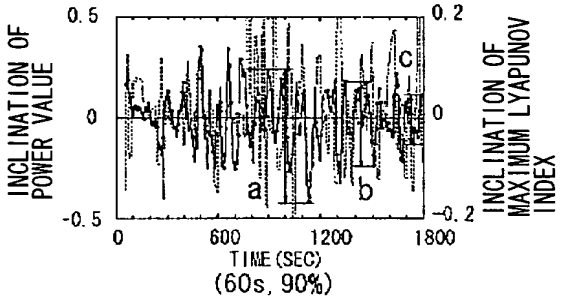
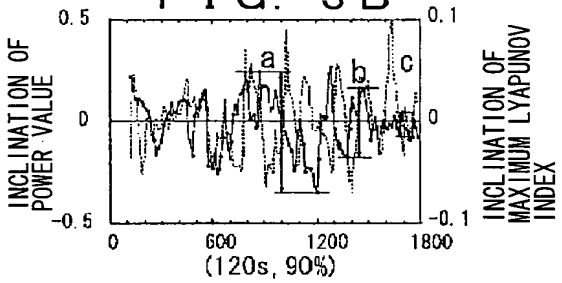

10
LIVING BODY SIGNAL MEASUREMENT DEVICE
1: FATIGUE DEGREE MEASUREMENT DEVICE
LIVING BODY SIGNAL DATA RECEIVING MEANS
21
MAXIMUM LYAPUNOV INDEX CALCULATING MEANS (STEP)
23
LIVING BODY SIGNAL PEAK VALUE DETECTING MEANS (STEP)
22
MAXIMUM LYAPUNOV INDEX PEAK VALUE DETECTING MEANS (STEP)
24
POWER VALUE CALCULATING MEANS (STEP)
25
INCLINATION CALCULATING MEANS (STEP)
[INCLINATION OF POWER VALUE CALCULATING MEANS]
[INCLINATION OF MAXIMUM LYAPUNOV INDEX CALCULATING MEANS]
COMPARISON AND DETERMINING MEANS (STEP)
(FATIGUE STATE DETERMINING MEANS (STEP))
26
FATIGUE DEGREE CALCULATING MEANS (STEP)
27
OUT PUT

FIG. 3A



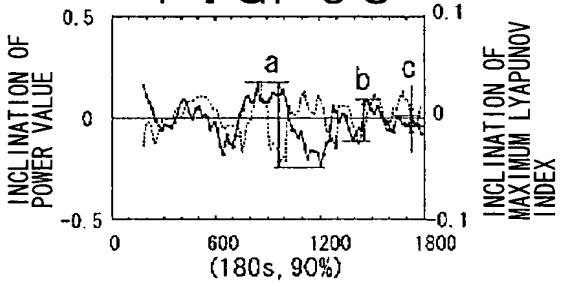
(60s, 90%)

FIG. 3B



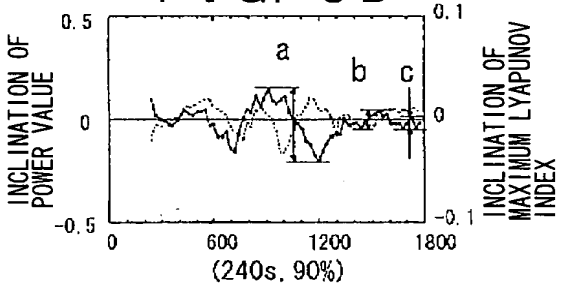
(120s, 90%)

FIG. 3C



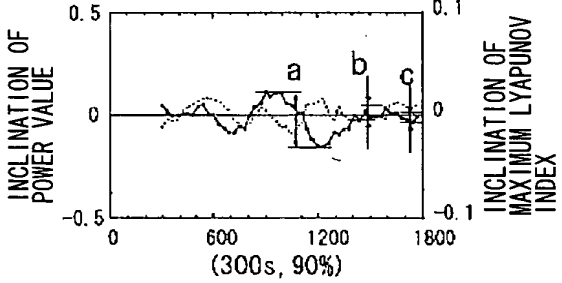
(180s, 90%)

FIG. 3D



(240s, 90%)

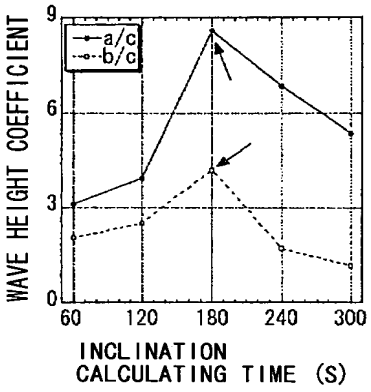
FIG. 3E



(300s, 90%)

(SAMPLING TIME, LAP RATE)

FIG. 3F



SLIDE CALCULATION LAP RATE = 90%

COMPARISON OF WAVE HEIGHT COEFFICIENT BASED ON SAMPLING TIME

—●— INCLINATION OF POWER VALUE

- -○- - INCLINATION OF MAXIMUM LYAPUNOV INDEX

a: FALLING ASLEEP WARNING SIGNAL
b: TRANSITION STATE SIGNAL TO SLEEP
c: SLEEPING SIGNAL

FIG. 2

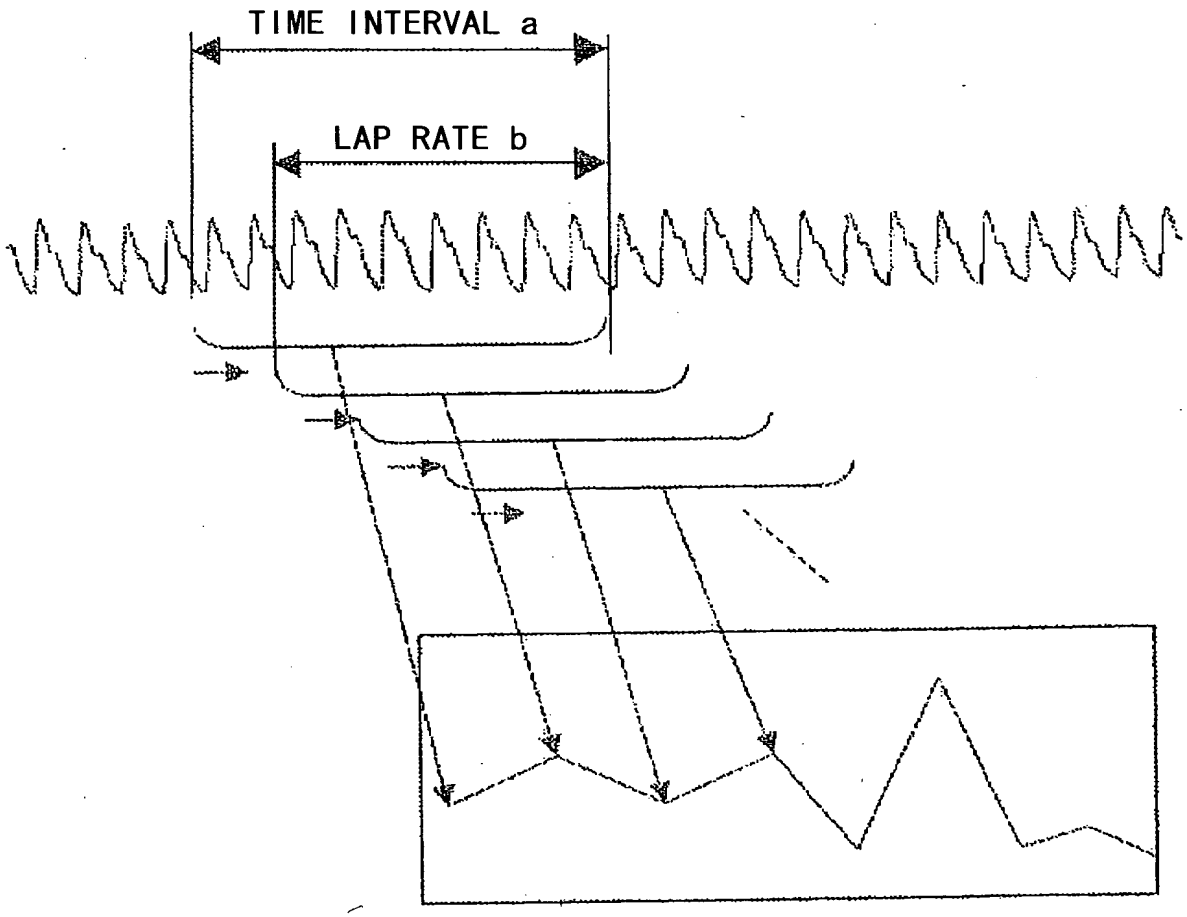


FIG. 4A

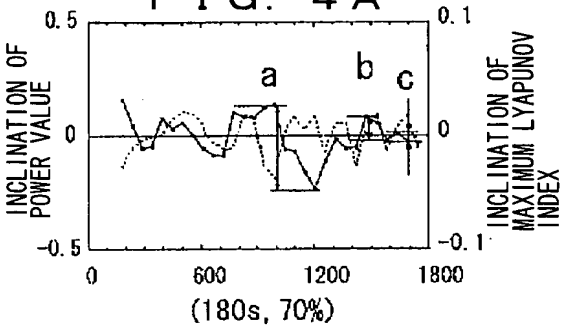


FIG. 4B

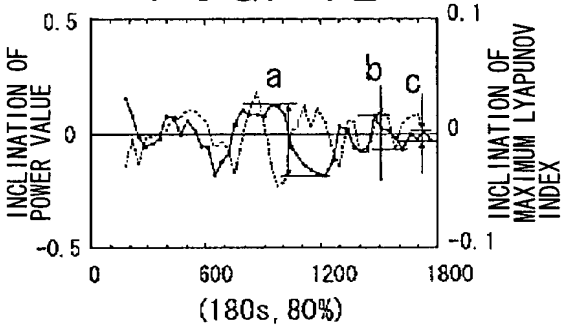


FIG. 4C

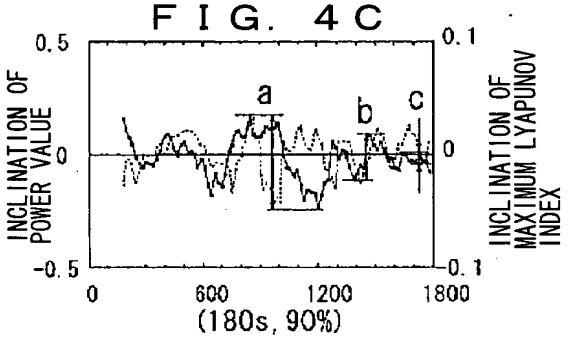


FIG. 4D

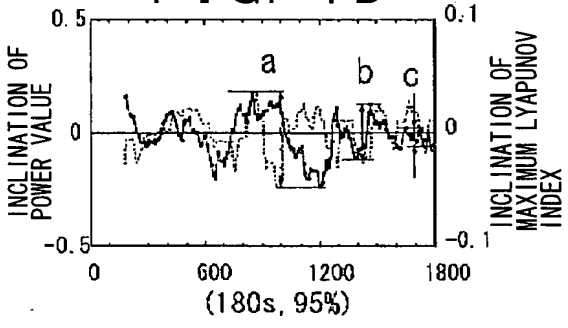
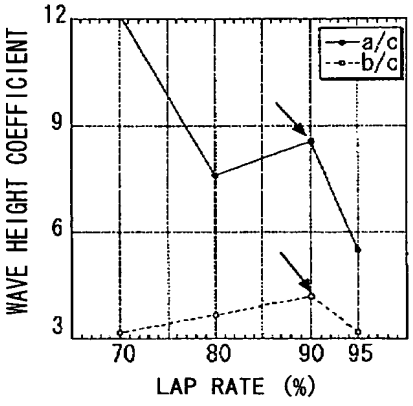


FIG. 4E



INCLINATION CALCULATING TIME = 180s

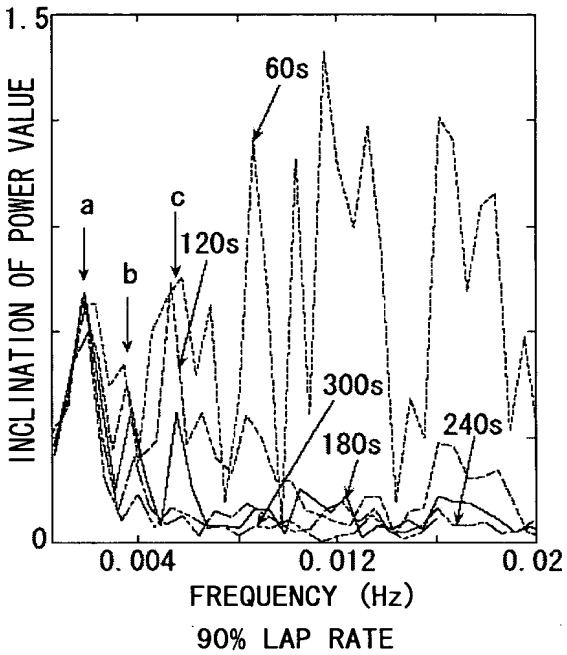
COMPARISON OF WAVE HEIGHT COEFFICIENT BASED ON LAP RATE

—●— INCLINATION OF POWER VALUE

- -○- - INCLINATION OF MAXIMUM LYAPUNOV INDEX

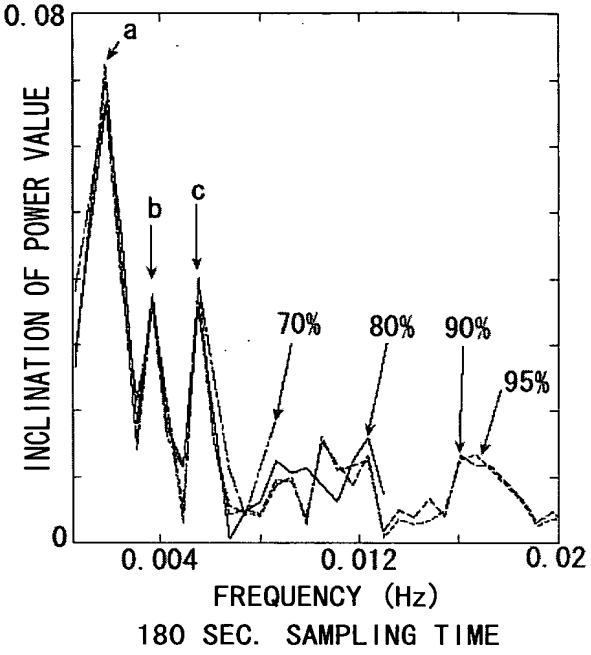
a: FALLING ASLEEP WARNING SIGNAL
b: TRANSITION STATE SIGNAL TO SLEEP
c: SLEEPING SIGNAL

FIG. 5A



90% LAP RATE

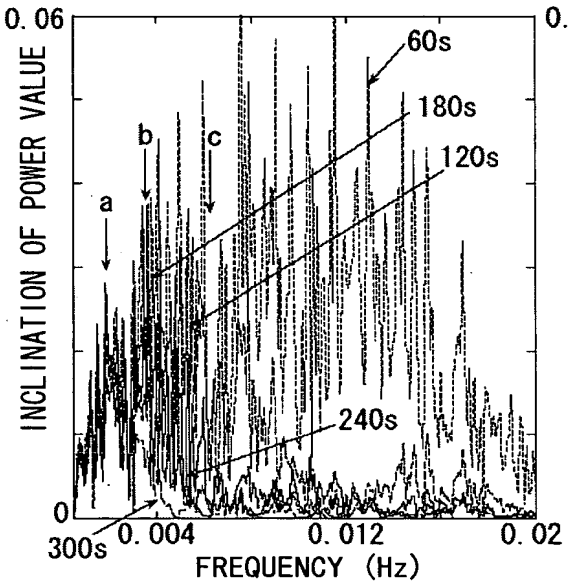
FIG. 5B



180 SEC. SAMPLING TIME

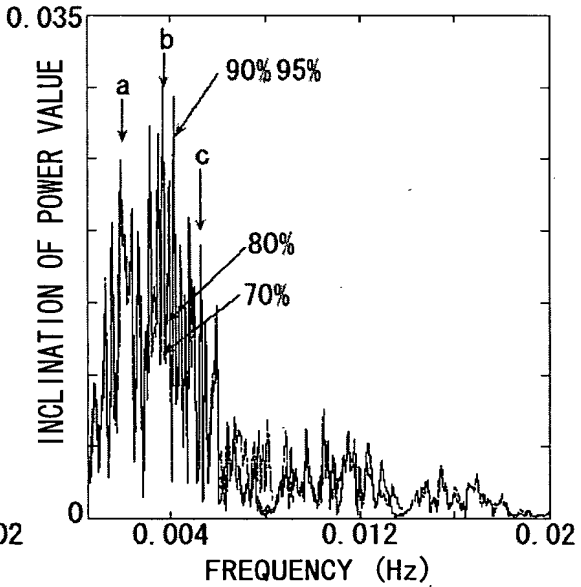
COMPARISON OF FREQUENCY ANALYSIS IN A CASE OF 30 MIN. EXPERIMENT

FIG. 6A



90% LAP RATE

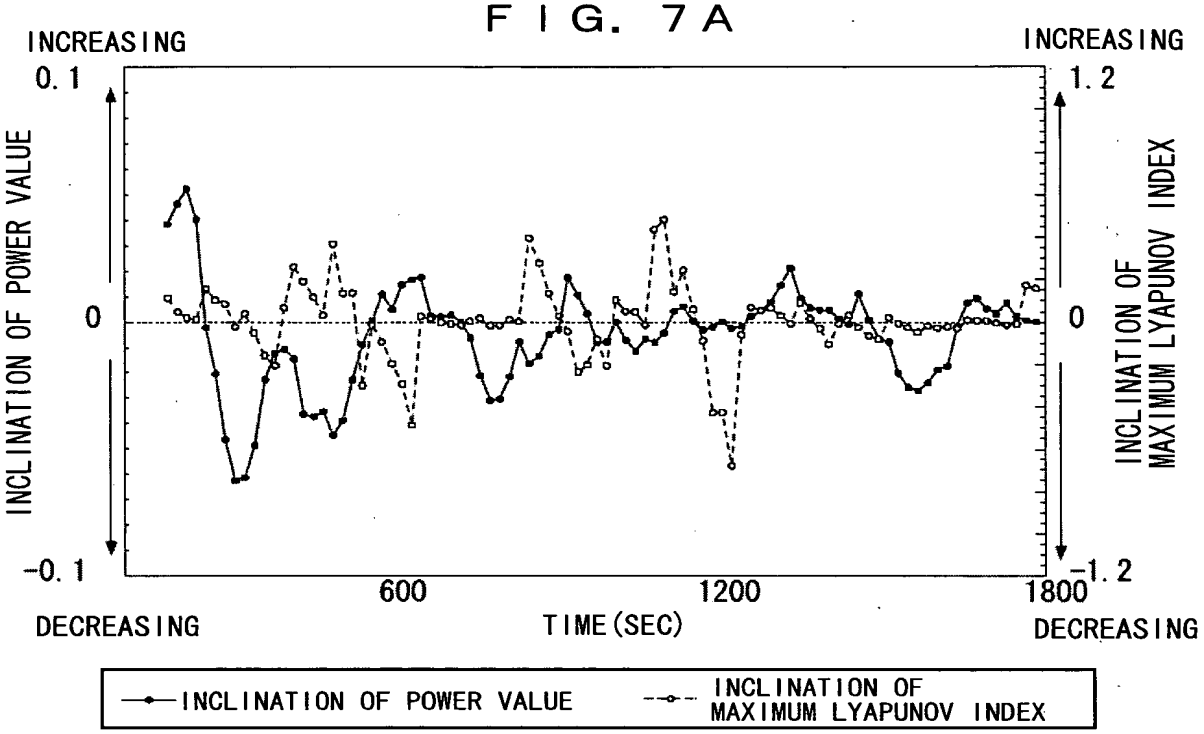
FIG. 6B



180 SEC. SAMPLING TIME

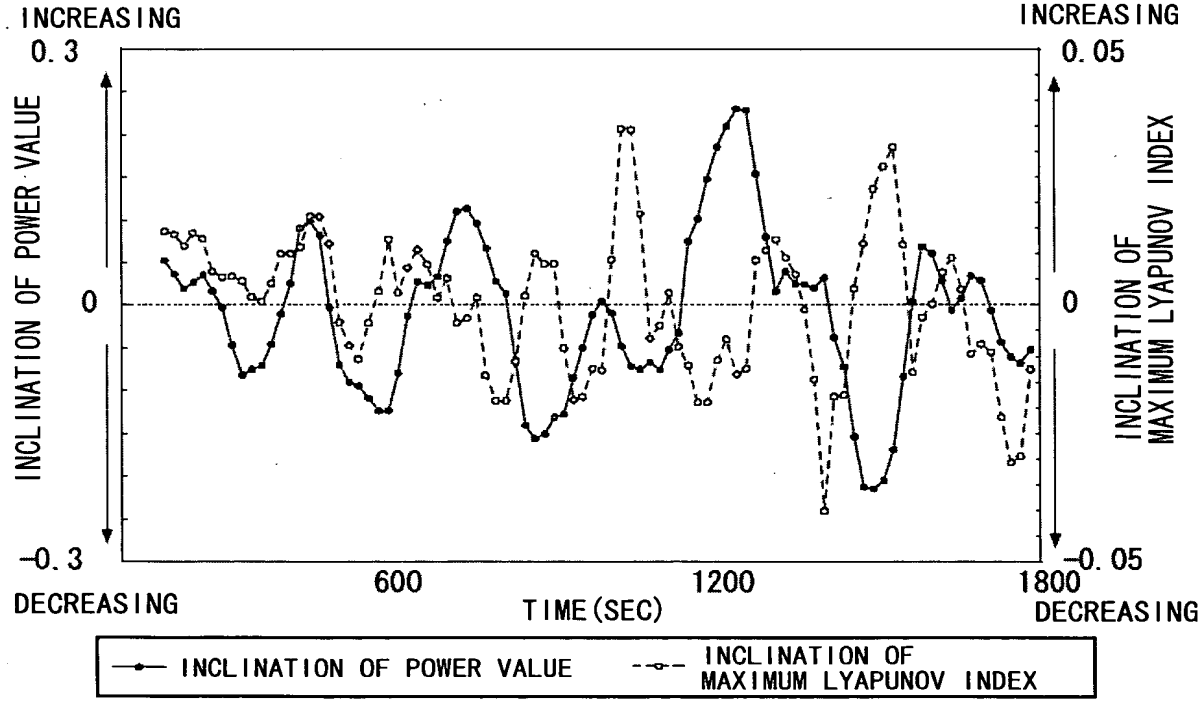
COMPARISON OF FREQUENCY ANALYSIS IN A CASE OF 180 MIN. EXPERIMENT

FIG. 7A



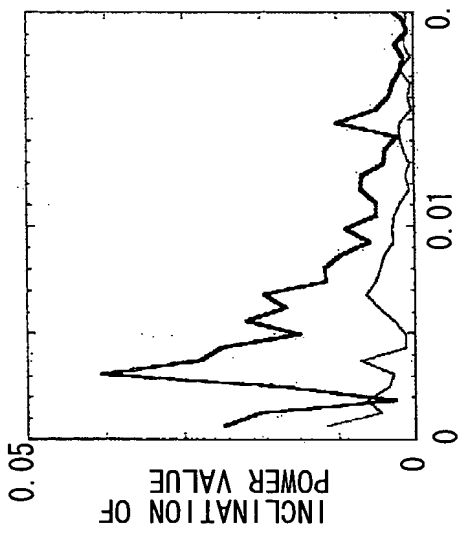
ROUND-SHOULDERED POSTURE (hunched posture)

FIG. 7B



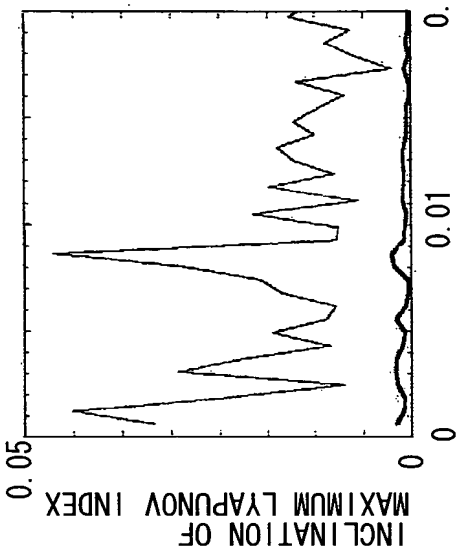
FORCED POSTURE (motionless posture)

FIG. 8A



FREQUENCY ANALYSIS OF POWER VALUE INCLINATION

FIG. 8B



FREQUENCY ANALYSIS OF INCLINATION OF MAXIMUM LYAPUNOV INDEX

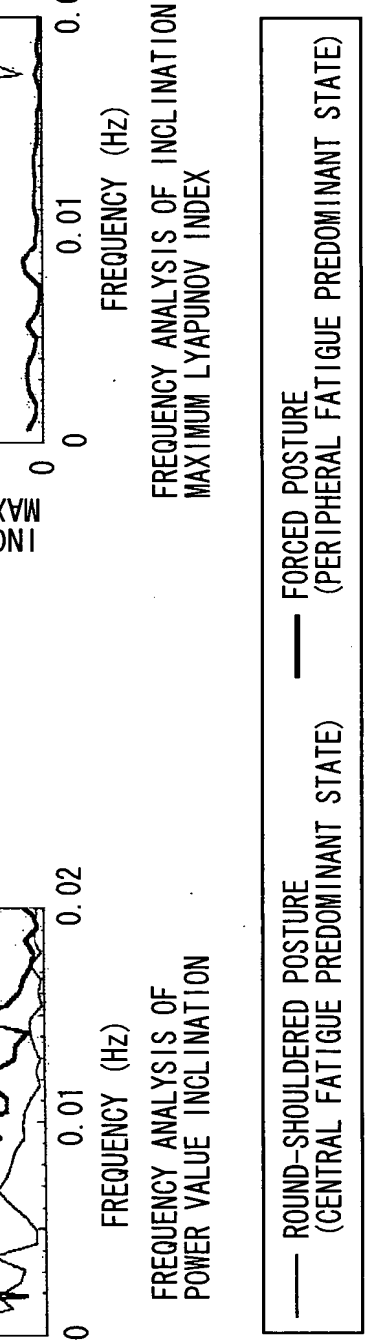


FIG. 9A

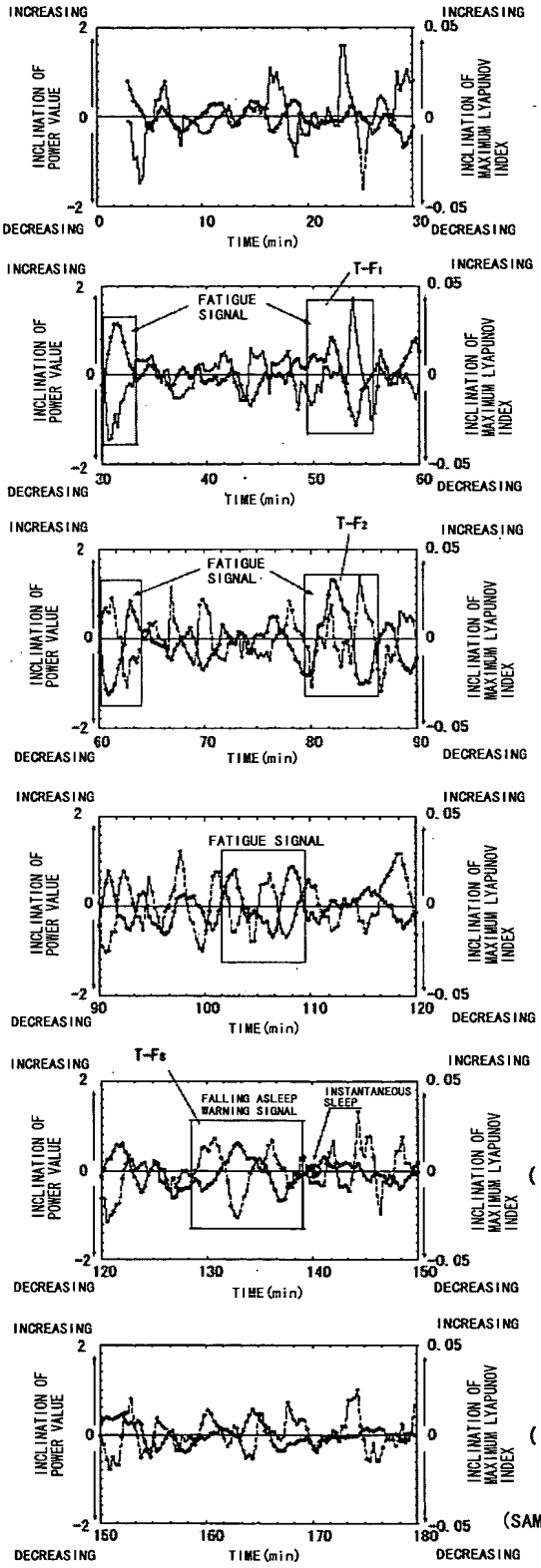
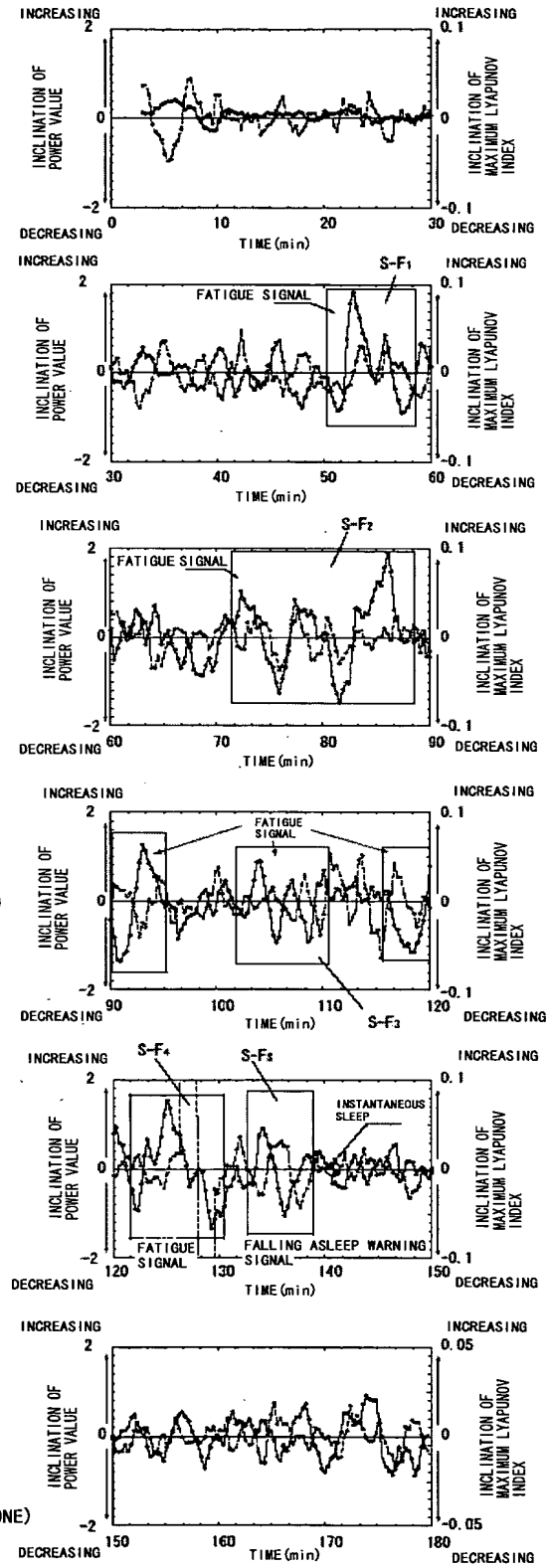


FIG. 9B



(SAMPLING TIME ZONE)

BODY PRESSURE DISPERSING TYPE SEAT

— INCLINATION OF POWER VALUE
— INCLINATION OF MAXIMUM LYAPUNOV INDEX

POSTURE-SUSTAINING TYPE SEAT

FIG. 10A

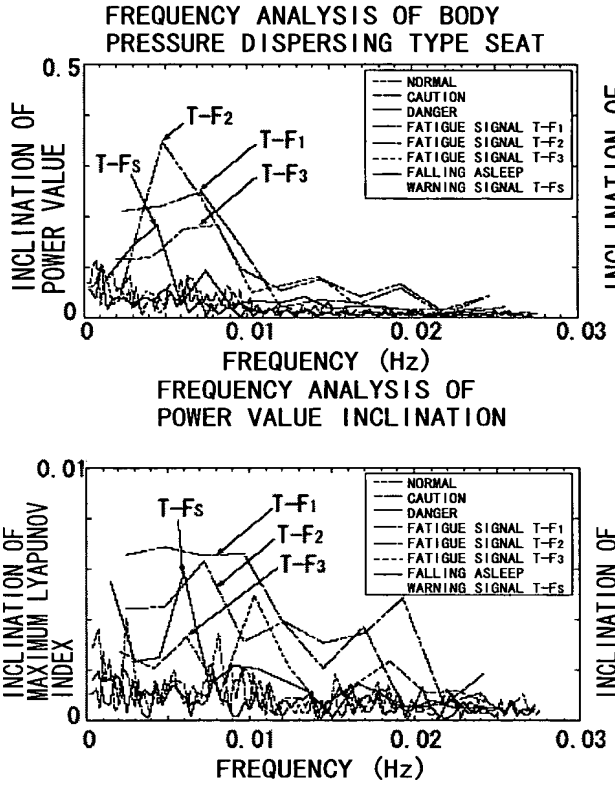


FIG. 10B

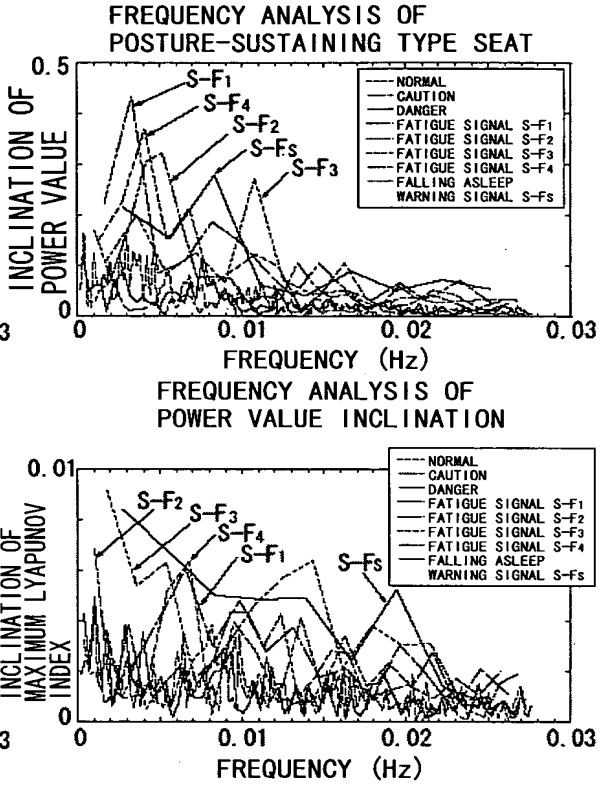


FIG. 11A

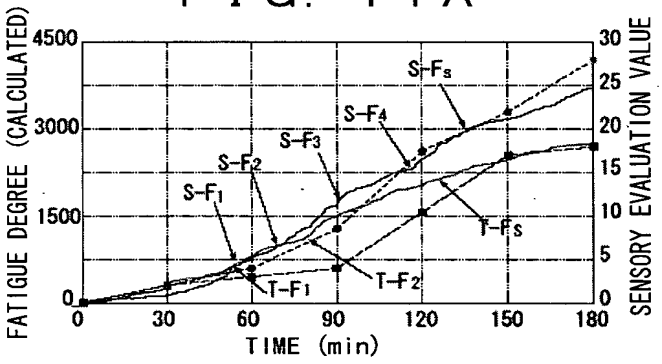
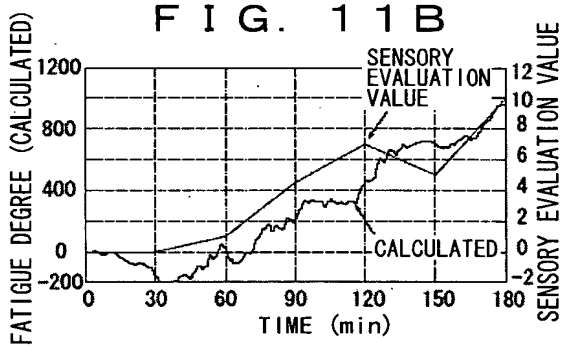


FIG. 11B



QUALITATIVE EVALUATION OF POSTURE-SUSTAINING TYPE SEAT ON THE BASIS OF BODY PRESSURE DISPERSING TYPE SEAT

S-F: FATIGUE SIGNAL (POSTURE-SUSTAINING TYPE SEAT)
T-F: FATIGUE SIGNAL (BODY PRESSURE DISPERSING TYPE SEAT)

— CALCULATED VALUE (POSTURE-SUSTAINING TYPE SEAT)
— CALCULATED VALUE (BODY PRESSURE DISPERSING TYPE SEAT)

-●- SENSORY EVALUATION VALUE (POSTURE-SUSTAINING TYPE SEAT)
-■- SENSORY EVALUATION VALUE (BODY PRESSURE DISPERSING TYPE SEAT)

FIG. 12A

FIG. 12B

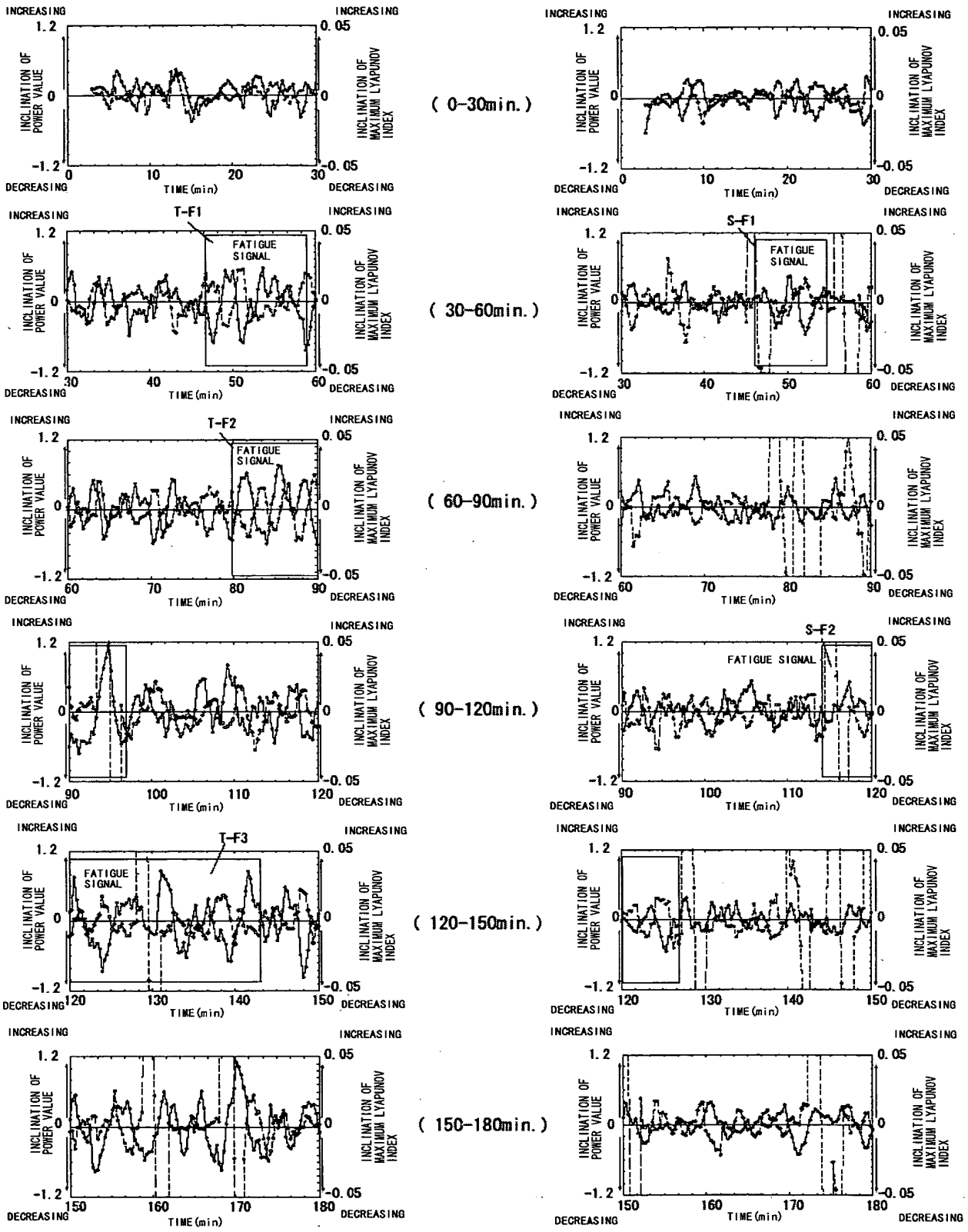
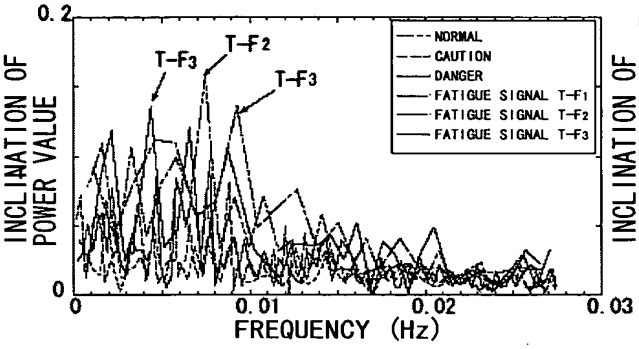
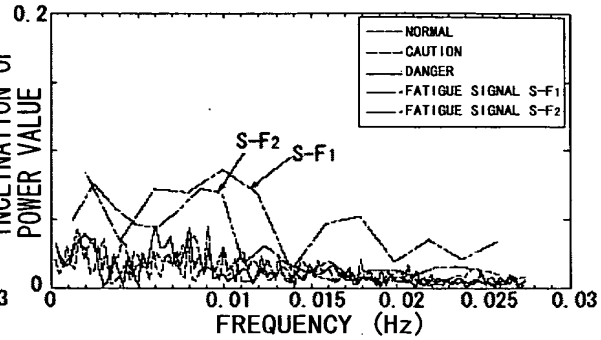


FIG. 13A

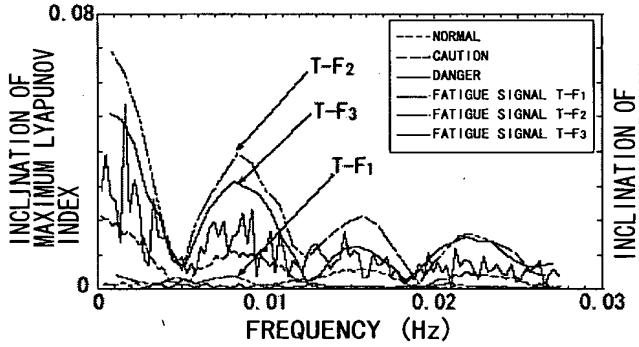


FREQUENCY ANALYSIS OF POWER VALUE INCLINATION

FIG. 13B

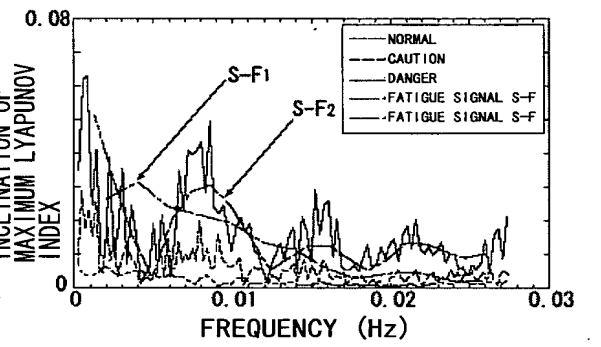


FREQUENCY ANALYSIS OF POWER VALUE INCLINATION



FREQUENCY ANALYSIS OF INCLINATION OF MAXIMUM LYAPUNOV INDEX

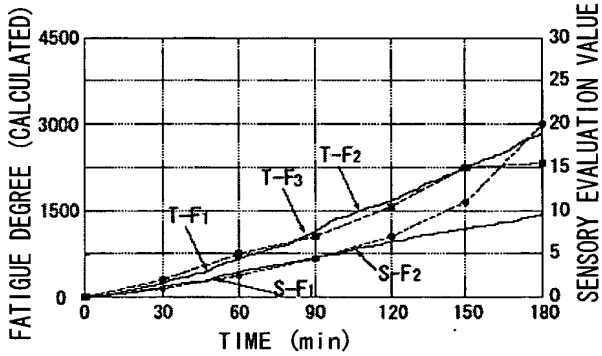
FREQUENCY ANALYSIS OF BODY PRESSURE DISPERSING TYPE SEAT



FREQUENCY ANALYSIS OF INCLINATION OF MAXIMUM LYAPUNOV INDEX

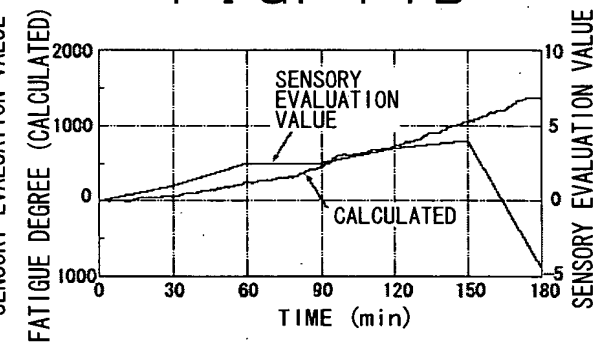
FREQUENCY ANALYSIS OF POSTURE-SUSTAINING TYPE SEAT

FIG. 14A



S-F: FATIGUE SIGNAL (POSTURE-SUSTAINING TYPE SEAT)
T-F: FATIGUE SIGNAL (BODY PRESSURE DISPERSING TYPE SEAT)

FIG. 14B



QUALITATIVE EVALUATION OF POSTURE-SUSTAINING TYPE SEAT ON THE BASIS OF BODY PRESSURE DISPERSING TYPE SEAT

— CALCULATED VALUE (POSTURE-SUSTAINING TYPE SEAT)
— CALCULATED VALUE (BODY PRESSURE DISPERSING TYPE SEAT)

-●- SENSORY EVALUATION VALUE (POSTURE-SUSTAINING TYPE SEAT)
-■- SENSORY EVALUATION VALUE (BODY PRESSURE DISPERSING TYPE SEAT)

FIG. 15A

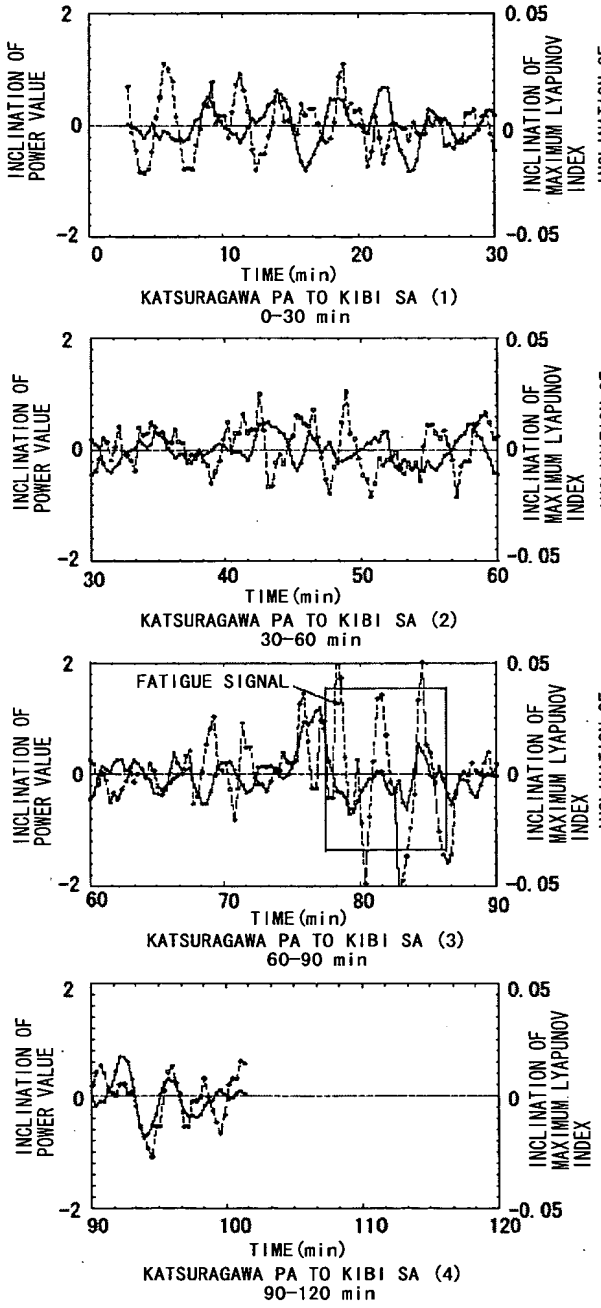


FIG. 15B

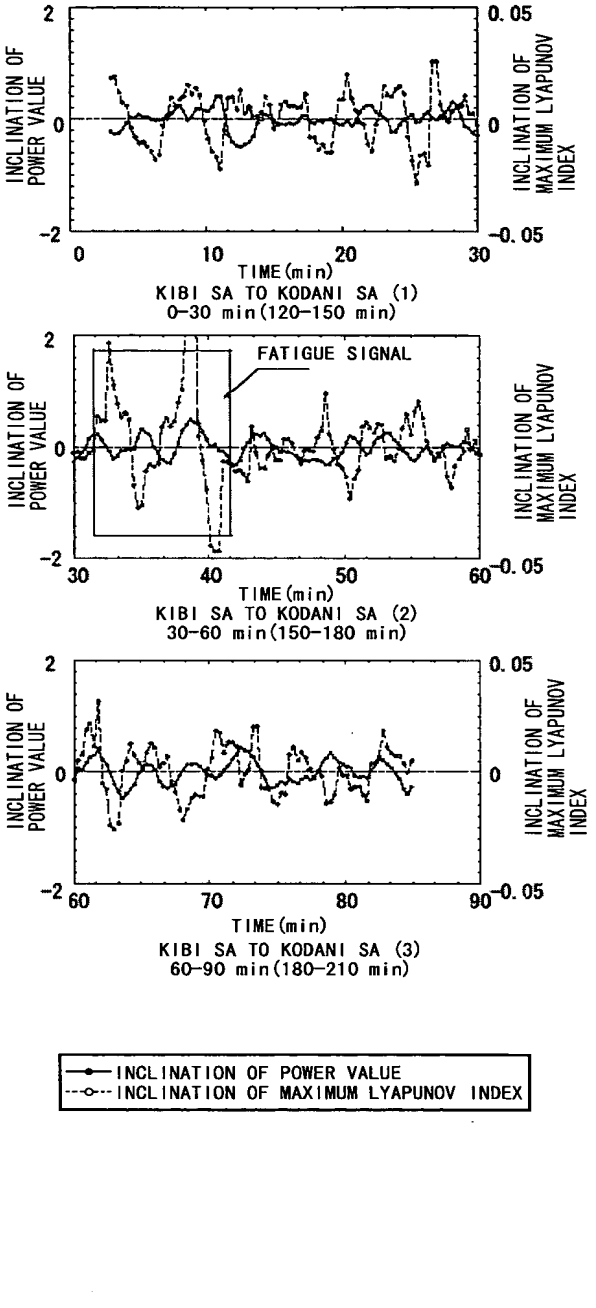
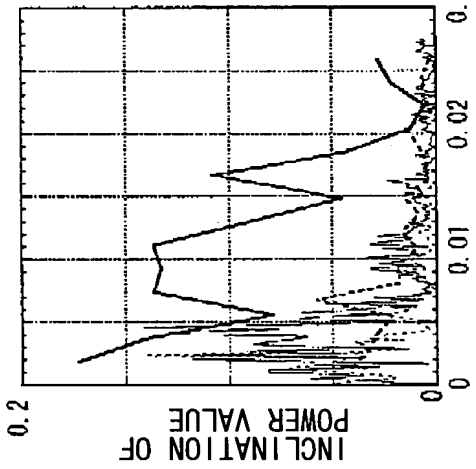


FIG. 16A



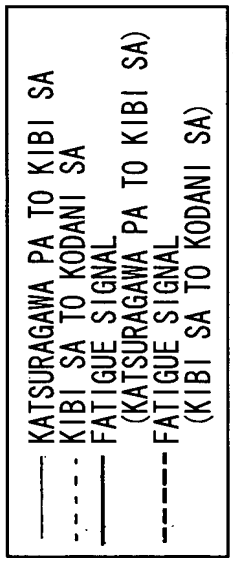


FIG. 16B

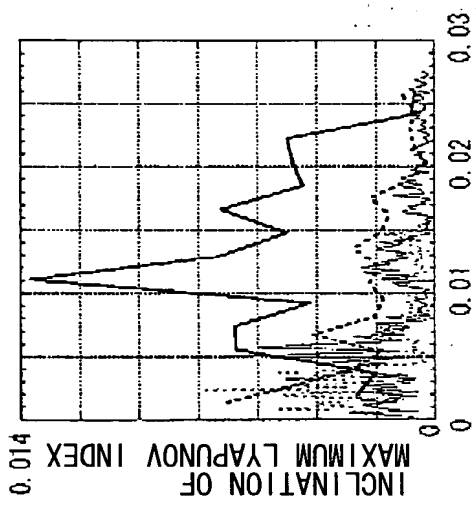


FIG. 17

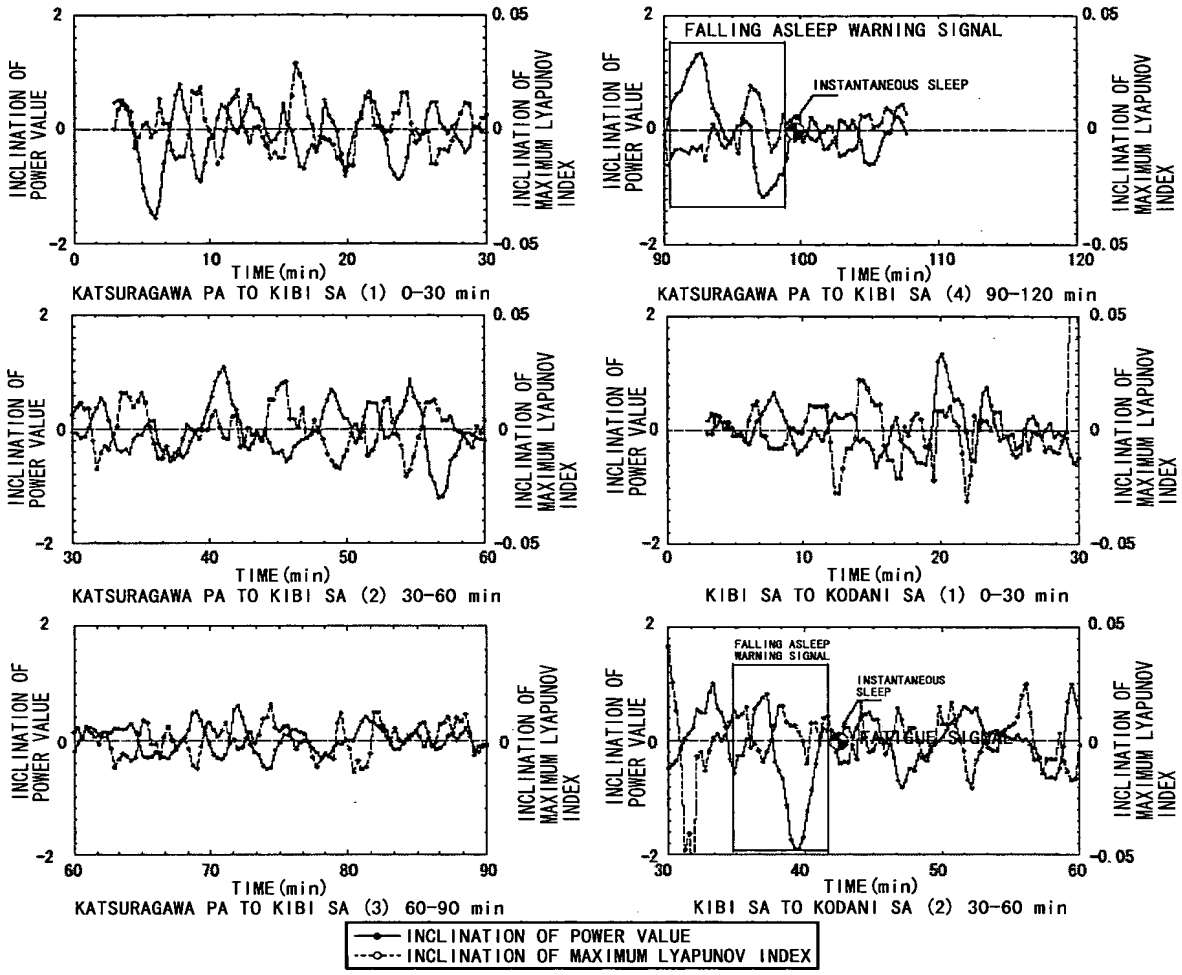


図18

FIG. 18

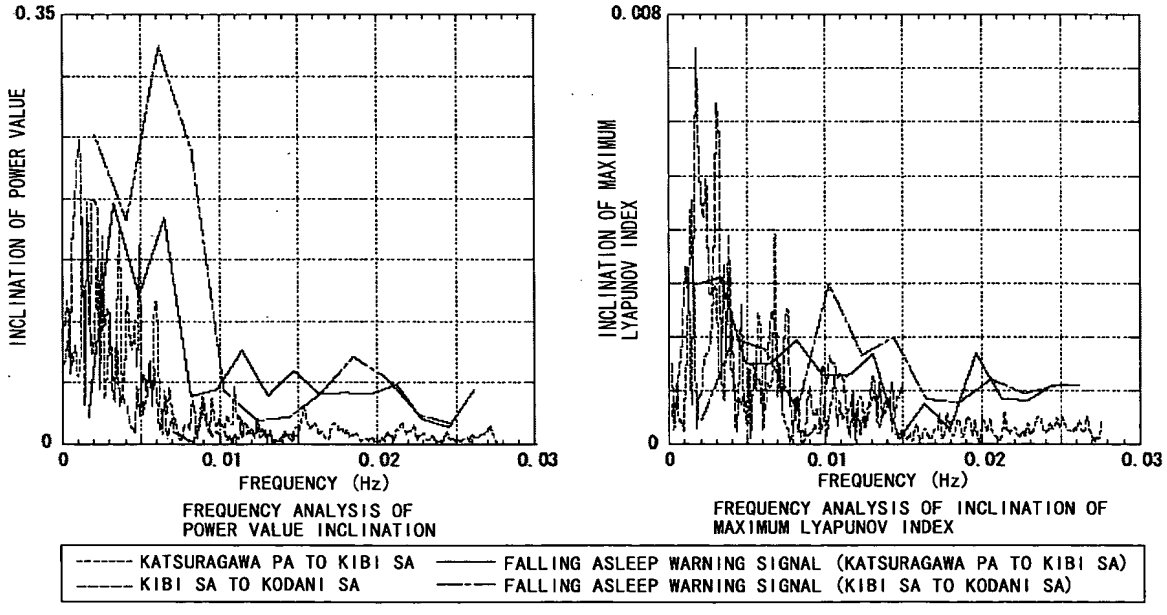
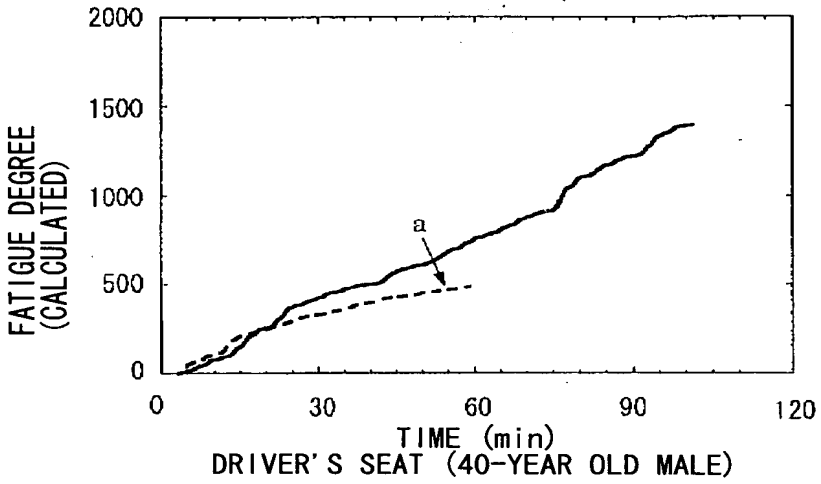
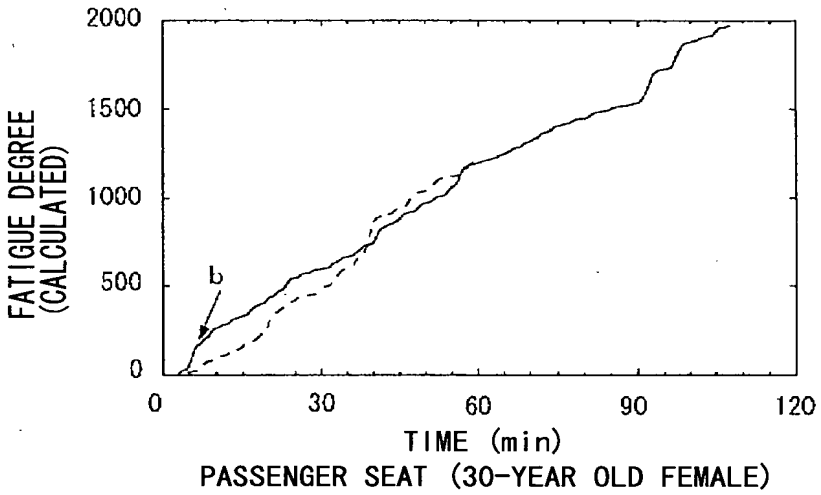


FIG. 19A



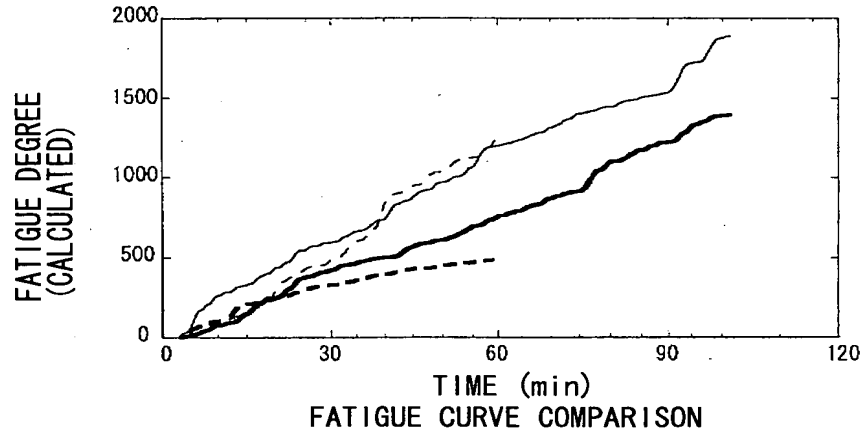
DRIVER'S SEAT (40-YEAR OLD MALE)

FIG. 19B



PASSENGER SEAT (30-YEAR OLD FEMALE)

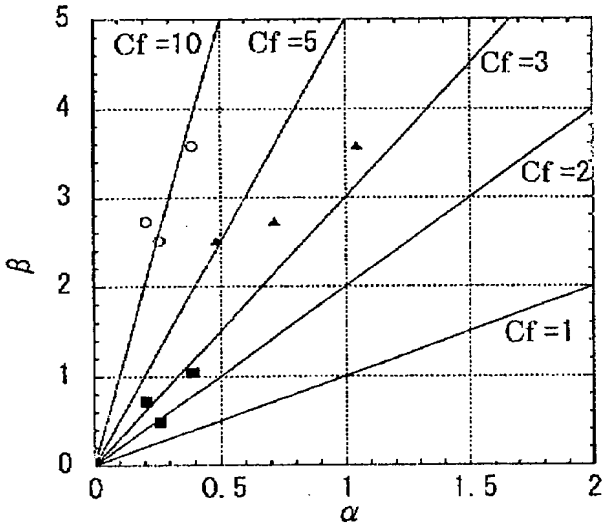
FIG. 19C



FATIGUE CURVE COMPARISON

———	CALCULATED VALUE (KATSURAGAWA PA TO KIBI SA) DRIVER'S SEAT 40-YEAR OLD MALE
- - -	CALCULATED VALUE (KIBI SA TO KODANI SA) DRIVER'S SEAT 40-YEAR OLD MALE
———	CALCULATED VALUE (KATSURAGAWA PA TO KIBI SA) PASSENGER SEAT 30-YEAR OLD FEMALE
- - -	CALCULATED VALUE (KIBI SA TO KODANI SA) PASSENGER SEAT 30-YEAR OLD FEMALE

FIG. 20



$$Cf = \frac{\alpha}{\beta}$$

○	α = SLEEP SIGNAL,	β = FALLING ASLEEP WARNING SIGNAL
▲	α = FATIGUE SIGNAL,	β = FALLING ASLEEP WARNING SIGNAL
■	α = SLEEP SIGNAL,	β = FATIGUE SIGNAL

FIG. 21A

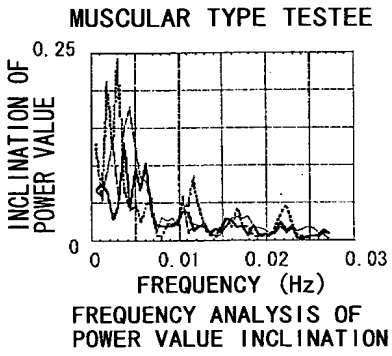


FIG. 21B

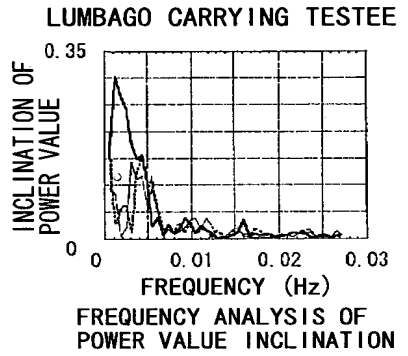


FIG. 21C